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(81) Etats désignés: AU, CN, JP, US, brevet européen (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

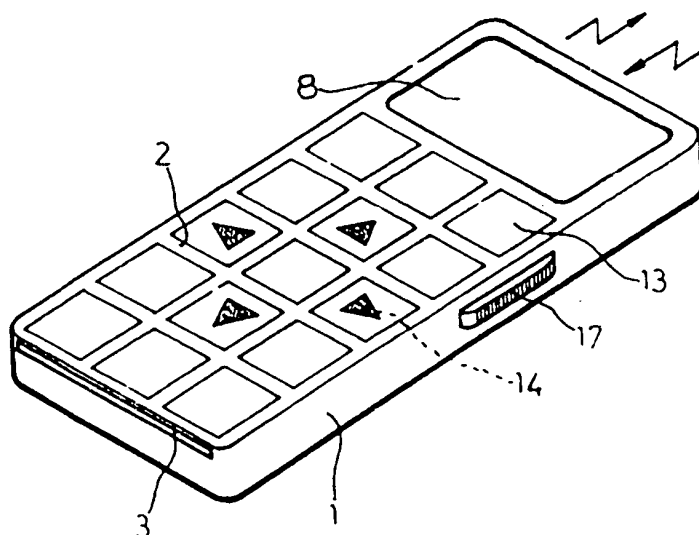
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(54) Title: CONTROL UNIT WITH A KEYPAD CONNECTABLE TO A SMART CARD FOR ACTIVATING THE UNIT AND KEYPAD

(54) Titre: BOITIER DE COMMANDE A CLAVIER COOPERANT AVEC UNE CARTE A MEMOIRE QUI REND LE BOITIER ET LE CLAVIER FONCTIONNELS

# (57) Abstract

A control unit (1) consisting of a touch-sensitive keypad (2), a display (8) and an operating system. Said unit (1) has a slot for a smart card (3) used to activate the unit (1). The keypad (2) comprises a number of touch-sensitive keys (13) made of transparent material so that the underlying inserted smart card (3) is visible. The back surface of the smart card (3) contacting the keypad (2) includes a set of customised indicia (14) each corresponding to one touch-sensitive key (13) on the keypad (2), and each of the smart card indicia (14) that can be seen through the transparent keys (13) of the keypad (2) represents the function assigned to the corresponding key (13) by the smart card (3) so that the unit (1) can be used in a variety of settings. Said unit is useful for remotely controlling electrical equipment and/or providing information to users.



Said unit is useful for remotely controlling electrical equipment and/or providing information to users.

VERIFICATION OF A TRANSLATION

I, the below-named translator, hereby declare that:

My name and post office address are as stated below:

I am knowledgeable in the English and French languages and I believe the attached English translation of PCT/FR95/00827 (WO 95/35534) in the name of MULTI-MEDIA TELEWARE INDUSTRIES LIMITED is a true and complete translation of that application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

February 26, 1996

Robert J. Patch



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**CONTROL HOUSING WITH A KEYBOARD COACTING**  
**WITH A MEMORY CARD WHICH ACTIVATES THE**  
**HOUSING AND THE KEYBOARD**

The present invention provides a new type of control housing, whose operation is due to the introduction of a memory card within a recess in the housing.

5 Numerous publications propose such housings, whose range of possibilities is proportional to the number of memory cards which can coact with each of these housings.

10 The document FR-A-2.604.275 relates to a device for practicing a process of utilization, processing and transfer of information between a data supply center and a pocket microcomputer associated or not with a memory card. The use of the pictogram technique renders its utilization particularly simple and puts it in reach of the public at large. The pictogram technique consists in designing symbols on the keys of the keyboard, this latter, forming an integral portion of the pocket microcomputer, can also be removable. In the most elaborate version, the assembly of the functions of  
15 keyboard, processing, display and transfer is integrated into one memory card, provided with a keyboard having pictograms and an ultra flat liquid crystal screen. The pocket microcomputer is then actually constituted by the memory card itself.

In this document, the association with a memory card is not necessary. What is necessary for this invention consists in the use of pictograms, whose simplicity of operation enlarges the number of potential users.

5           The document FR-A-2.674.649 relates to a device for practicing a process to telecontrol several items of electrical apparatus and equipment. The process comprises at least one transaction between at least one data support, particularly a support that can be plugged in, comprising several microcircuits, and a support for processing and selective emission of control  
10           signals by electromagnetic means toward said apparatus, provided to receive said data support.

          Here, the introduction of a data support such as a memory card, permits adapting the device to the use to which it is desired to be put and to the apparatus which it must remotely control.

15           The document FR-A-2.969.888 describes and claims a communicating housing system, comprising a memory card reader, a tactile screen and communication means, according to any type of known support. The housing is not initially dedicated to any use, and it is a memory card, once introduced into the reader provided for this purpose, which determines its  
20           function, which gives to the tactile screen a display adapted to the determined use, and which also defines the nature of the analog and/or digital signals, capable of giving and receiving ad hoc instructions, via the selected transmission support.

          As in the preceding device, this communication housing is  
25           activated by the presence of a memory card. According to the nature of the card introduced, the housing, whose upper surface is formed by a screen, takes on a configuration to permit certain functions. Thus, the screen can be

transformed into a particular tactile screen permitting easy use by the public at large.

The principle of the present invention is similar to the document FR-A-2.696.888. However, it appeared to the inventor that the use, in a control housing, of a keyboard-screen would be fairly difficult from a physical and economical viewpoint.

The document DE-A-3.637.684 proposes a storage card comprised of an electronic instrument operating by means of a user program for which it is configured. On the two surfaces of the storage card are ideagram keys. When said storage card is introduced into the electronic instrument, the keys on a single surface are visible through a transparent window of said instrument.

The document EP-A-0.355.742 has for its object a control apparatus in which the control data are memorized in a recording element in correspondence with the various switches on the control apparatus, the recording element being enclosed detachably in a principal housing of the control apparatus. The principal housing of the telecontrol apparatus comprises a receiver to receive control signals supplied externally, a control unit to memorize the control data obtained by demodulation of the control signal supplies externally in correspondence with the touch-switches of the recording element, and interfaces for coupling the recording element with the telecontrol housing. The user memorizes the control data in the recording element based on a predetermined arrangement of the keys such that an original arrangement of the keys conforming to the wishes of the user can be effected.

Neither of these two documents proposes a housing having a transparent keyboard with which is associated a memory card, without keys or keyboard, but with ideagrams which characterize the transparent keyboard

of the housing. The cost of the invention is thus much less, because with a single keyboard, one can use different memory cards. Moreover, the size is also reduced because there is only used simple chip cards, of the bank card type.

5           The invention thus consists in eliminating the keyboard-screen and in replacing it with a keyboard with no data, but which is transparent, which coacts with a memory card, bearing data relative to the function attributed to the housing by the introduction of the memory card.

10           To this end, the present invention relates to a control housing formed of a tactile keyboard, communication means and operating means of the assembly, a housing being adapted to receive, in a recess provided for this purpose, a memory card which actuates said housing, characterized by the fact that the keyboard is comprised by a certain number of tactile keys which are of transparent material, leaving visible the subjacent memory card  
15           which has been introduced, and by the fact that said memory card comprises, on its back, located in contact with the housing, an assembly of individualized data, each datum corresponding to one of the tactile keys of the keyboard, and in that each datum, carried by the memory card and visible through each key of the keyboard, is representative of the function attributed  
20           to each corresponding key by said memory card, which actuates the housing in different fields.

          The keyboard partially surrounds the recess of the housing which receives the card.

25           According to one embodiment, the housing is constituted by means for communicating with the user of the housing, among other ways, by a display screen for the data from the memory card via the operating means of said housing.

According to another embodiment, the housing is constituted by means for communicating with the electrical apparatus, formed among other ways by an identification scanner with the apparatus with which the dialog via the control interface is established, and by sending and/or receiving means for signals from the memory card and/or from the electrical apparatus.

The data carried by the memory card are formed by directional and/or ideogram signals.

The housing comprises a slot for introduction and/or a button for ejection which facilitate the insertion and removable of the memory card from the recess of said housing.

The memory card comprises data and at least one chip on its two surfaces (front and back), such that the operation of the housing with a same card is at least doubled.

The accompanying drawings are given by way of illustrative but nonlimiting example. They show different preferred embodiments of the invention. They permit easy comprehension of the invention.

Figure 1 shows a view from above of a control housing and of a memory card, according to the invention, before introduction of the card into the recess of the housing.

Figure 2 shows a plan view of a control housing and of a memory card, according to the invention, after introduction of the card into the recess of the housing.

Figure 3 shows a cross-sectional view on line A-A of Figure 1, which is to say a transverse cross-sectional view of the housing.

Figure 4 shows a cross-sectional view on line B-B of Figure 2, which is to say a transverse cross-sectional view of the housing containing the memory card.

Figure 5 shows a perspective view of a control housing, according to the invention, in operation, which is to say that the memory card is in place.

Figure 6 shows a plan view of the back of a memory card.

5 Figure 7 shows a plan view of the back of another memory card, or of the front of the same card as that shown in Figure 6.

Figure 8 shows the different functional blocks of the housing according to the invention, which is say the different functions controlled by the microprocessor of said housing.

10 Figure 9 shows the schematic and electronic architecture of the housing.

The present invention relates essentially to a control housing 1 whose keyboard is of a new type.

15 Thus, the keyboard is of normal appearance but is formed of two elements comprising on the one hand the housing 1, on the other hand, the memory card 3 which is engaged within a recess 15 provided in said housing 1.

20 Thus, the housing 1 is constituted on its upper surface by a tactile keyboard 2, properly so-called, having the essential property that it is transparent. This keyboard 2 therefore comprises a certain number of tactile keys 13 which have no function when the card 3 is not in place within the recess 15.

25 The memory card 3, for its part, comprises a certain number of data 14 disposed on its back. These data can be constituted by directional symbols as is seen in Figure 6 or by ideagrams as is also seen in Figure 6, but also by numerals or letters as is shown in Figure 7.



Once the memory card 3 is introduced into the recess 15 of the housing 1, the subjacent data 14 are superposed on the tactile keys 13 of the keyboard 2.

5 The memory card 3, by means of its chip 18, programs the housing 1 via a connector 4 of the card 3 and an interface 5 of the card 3 directly connected to a microprocessor 9, as is shown in Figure 9.

This programming permits assigning to each tactile key 13 a function which relates to the subjacent data 14 carried by the memory card 3.

10 Because of this, the control housing 1 which is formed of the tactile keyboard 2, communication means 6, 7 and 8, operating means 4, 5, 9, 10, 11 and 12, of the assembly, can receive within the recess 15, provided for this purpose, the memory card 3 which actuates said housing 1. The housing 1 is characterized by the keyboard 2 which is comprised of a certain  
15 number of tactile keys 13, whose number is not limited, of transparent material leaving visible the subjacent memory card 3 which will be or has been introduced, as shown in Figures 1 and 2.

Moreover, said memory card 3 comprises on its back, which is to say the surface situated in contact with the keyboard 2, an assembly of  
20 individualized data 14, each datum 14 corresponding to one of the tactile keys 13 of the keyboard 2.

As a result, each datum 14, carried by the memory card 3, is visible through the transparency of each key 13 of the keyboard 2 and is representative of the function attributed to each corresponding key 13 carried  
25 by said memory card 3.

It is therefore possible to use the housing 1 in different fields whose range is limited only by the number of cards 3 available on the market.

Essentially, there should be nothing which impairs the readability of the card 3, between said keyboard 2 and said card 3.

Because of this, the keyboard 2 partially surrounds the recess 15 of the housing 1 which receives the card 3.

5 According to one embodiment, shown in Figures 1 and 2, the housing 1 is constituted by communication means 4, 5 and 8 with the user of the housing 1 formed among other things by a display screen 8 for the data from the memory card via operating means 9, 10, 11 and 12 of said housing 1.

10 The communication means 4, 5 and 8 and operating means 9, 10, 11 and 12 will be more precisely understood from the following description.

15 According to another embodiment, which is only partially represented in the figures, the housing 1 is constituted by communication means with electrical apparatus formed, among other things by an identification scanner with the apparatus with which the dialog, by a control interface 16, is established and by emission means 6 and/or reception means 7 for signals from the memory card and/or from the electrical apparatus. The electrical apparatus can be constituted, for example, by electrical radios, 20 electrical communication apparatus with station search, digital telephone networks, bar code readers.

25 Nevertheless, these two embodiments can be comprised in the same housing 1, as is shown in Figure 5, which is to say that there is both the keyboard 2 and the possibility of sending and receiving, as shown by the two arrows located on the screen 8.

According to an embodiment that is not shown in the figures, the housing 1 comprises a slot or recess permitting the introduction and also the manual retrieval of the memory card 3.

In like fashion, and as shown in Figures 1, 2 and 5, the housing 1 comprises an ejector button 17 permitting ejecting said memory card 3 automatically from the recess 15 of said housing 1.

5 As is shown in Figures 6 and 7, the memory card 3 can comprise data 14 and a chip 18 on its two surfaces (back and front) such that the operation of the housing 1 with the same card 3 is doubled. To do this, it suffices to turn the card 180° about its longitudinal axis.

10 As is seen in Figure 8, the assembly of the housing 1 is controlled by a microprocessor 9, whose different functions are programmed by introduction of the card 3 within the recess 15.

15 The microprocessor 9 can operate the control interface 16, the screen 8, the tactile keyboard 2, a clock 19, a generator with frequency multiplication from two sounds so-called DTMF generator 20, a vibrator in the form of a buzzer 21, whose functions are already well known to those engaged in electronics.

In Figure 9, the electronic environment of the microprocessor 9 is detailed. There will be noted the presence of the connector 4 and the interface 5 permitting associating the card 3 with the microprocessor 9.

20 There also exists a control interface 16 which is connected to a sender 6 and a receiver 7 permitting the control of electrical apparatus remote from housing 1.

This control can for example be of the infrared or any other type of connection or protocol for bidirectional communication.

25 The microprocessor 9 also operates in direct connection with the tactile keyboard 2, to which it gives the electronic functions corresponding to the subjacent data 14 of the card 3 located below its touch-sensitive keys 13.

In conventional manner, the microprocessor 9 operates with the aid of a read-only memory 10, a random access memory 11 and a programmable read-only memory erasable by an electronic means 12 in the form of an EEPROM.

## REFERENCES

1. Control housing
2. Touch-sensitive keyboard
3. Memory card
- 5 4. Connector for card 3
5. Interface for card 3
6. Sender
7. Receiver
8. Screen
- 10 9. Microprocessor
10. Read-only memory
11. Random access memory
12. Read-only memory programmable and erasable by electronic means
13. Touch-sensitive keys
- 15 14. Data such as directional symbols, ideograms
15. Recess in the housing 1 receiving the card 3
16. Control interface
17. Ejection button for the card 3
18. Chip for the card 3
- 20 19. Clock
20. DTMF generator
21. Vibrator

## CLAIMS

1. Control housing (1) formed from a touch-sensitive keyboard (2), communication means (6, 7 and 8) and operating means (4, 5, 9, 10, 11 and 12) for the assembly, the housing (1) being adapted to receive, in a recess (15) provided for this purpose, a memory card (3) which operates said housing (1), characterized by the fact

that the keyboard (2) is comprised by a certain number of touch-sensitive keys (13) which are of transparent material, leaving visible the subjacent memory card (3) which has been introduced,

that said memory card (3) comprises, on its back, located in contact with the keyboard (2), an assembly of individualized data (14), each datum (14) corresponding to one of the touch-sensitive keys (13) of the keyboard (2), and

that each datum (14) carried by the memory card (3) and visible through the transparency of each key (13) of the keyboard (2) is representative of the function attributed to each corresponding key (13) by said memory card (3), which operates the housing (1) in different fields.

2. Housing according to claim 1, characterized by the fact that the keyboard (2) partially encloses the recess (15) of the housing (1) which receives the card (3).

3. Housing according to any one of claims 1 or 2, characterized by the fact

that the housing (1) is constituted by communication means (4, 5 and 8) with the user of the housing (1) formed among other things by a display screen (8) for the data from the memory card (3) via the operating means (9, 10, 11 and 12) of said housing (1).

4. Housing according to any one of claims 1, 2 or 3, characterized by the fact

that the housing is constituted by communication means with electrical apparatus, formed among other things by an identification scanner with the apparatus with which the dialog via a control interface (16) is established, and by sending means (6) and/or receiving means (7) of signals from the memory card (3) and/or from the electrical apparatus.

5. Housing according to claim 1, characterized by the fact that the data (14) carried by the memory card (3) are comprised by directional signals and/or ideagrams.

6. Housing according to any one of claims 1, 2, 3 or 4 characterized by the fact

that the housing (1) comprises an introduction slot and/or an ejector button (13) which facilitates the insertion and expulsion of the memory card (3) of the recess (15) of said housing (1).

7. Housing according to any one of claims 1, 3, 4, 5 or 6, characterized by the fact

that the memory card (3) comprises data (14) and a chip (18) on its two faces (rear and front) such that the operation of the housing (1) with a same card (3) is doubled.

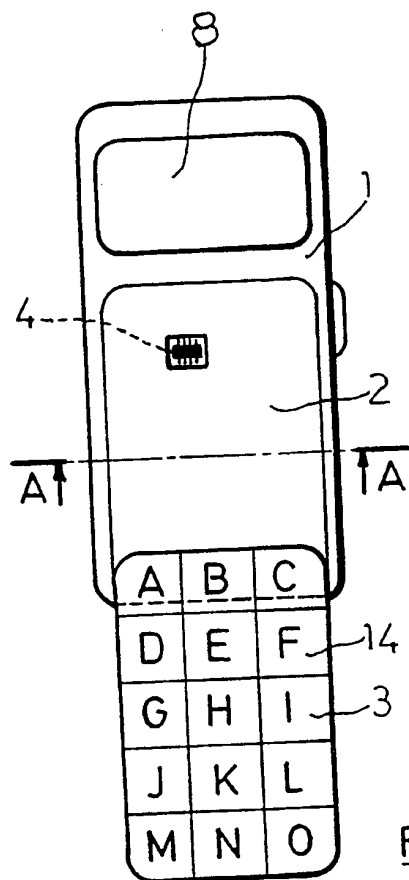


Fig. 1

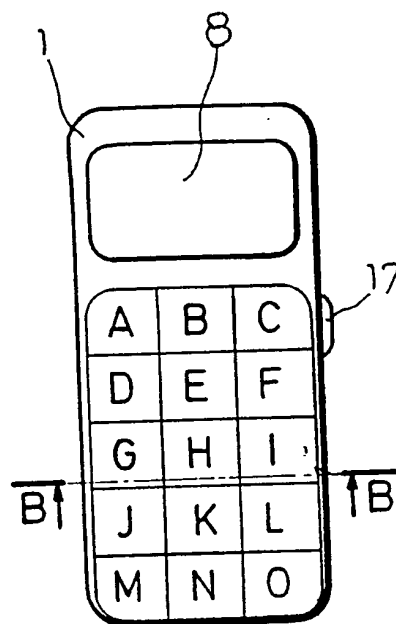


Fig. 2

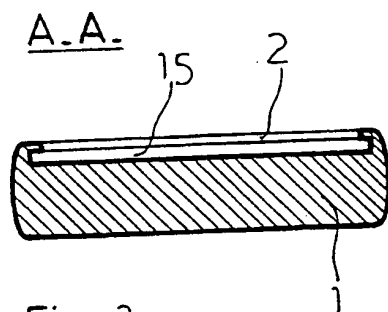


Fig. 3

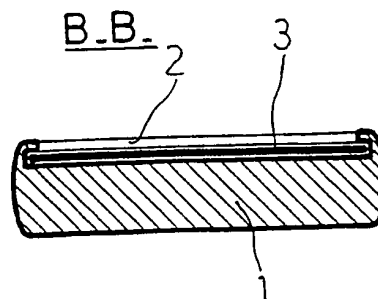


Fig. 4



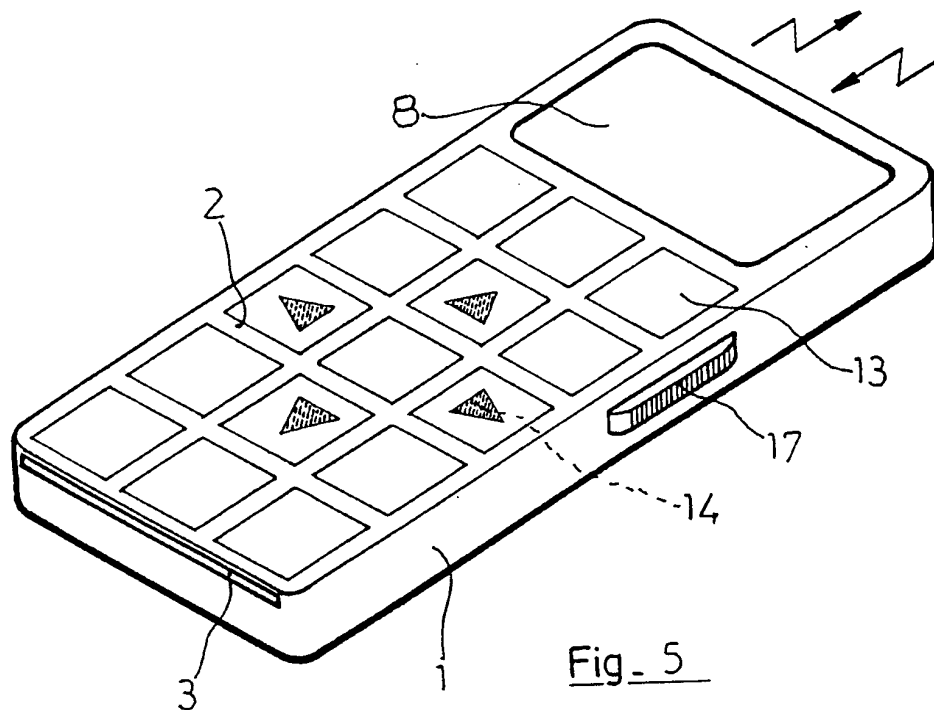


Fig. 5

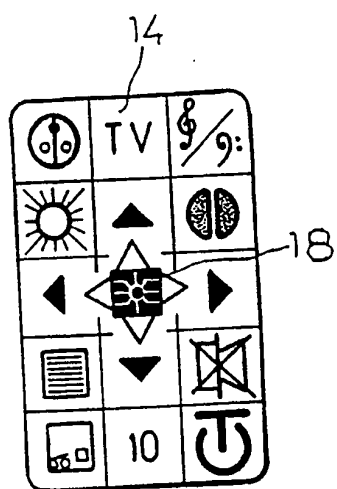


Fig. 6

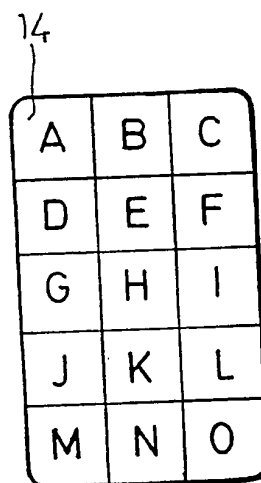
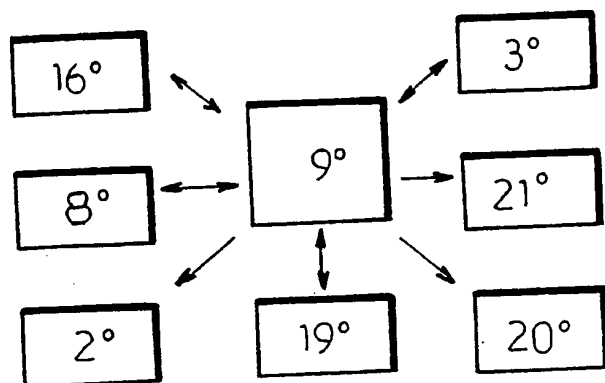
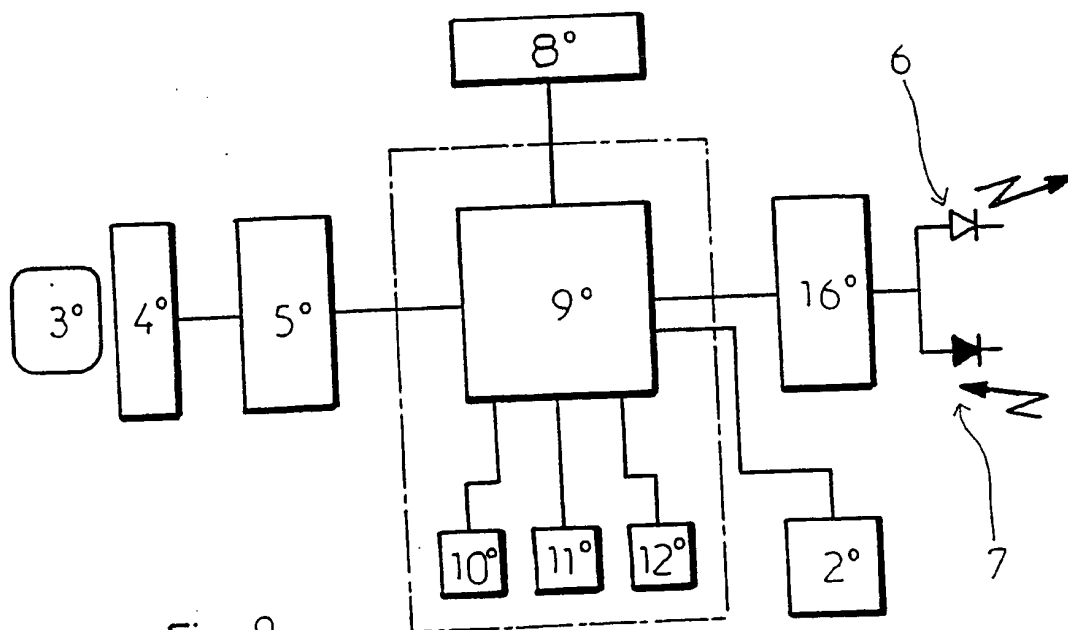


Fig. 7

Fig-8Fig-9

# INTERNATIONAL SEARCH REPORT

Intern. Appl. Application No  
PCT/FR 95/00827

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 G06F3/023 H03J1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 G06F H03J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE,A,36 37 684 (SHARP) 7 May 1987 cited in the application see the whole document ---	1-5,7
Y	FR,A,2 696 888 (MORGAIN SYLVAIN ;PARIENTI RAOUL) 15 April 1994 see page 2, line 1 - page 3, line 4 see page 5, line 26 - line 30 ---	1-5,7
A	EP,A,0 355 742 (SONY CORPORATION) 28 February 1990 cited in the application see column 4, line 20 - column 6, line 7 see column 7, line 24 - column 11, line 14 --- -/--	1,2,4,5, 7

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "&" document member of the same patent family

Date of the actual completion of the international search

4 October 1995

Date of mailing of the international search report

11. 10. 95

Name and mailing address of the ISA

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Fax: ( + 31-70) 340-3016

Authorized officer

Bailas, A

# INTERNATIONAL SEARCH REPORT

Inter. nal Application No  
PCT/FR 95/00827

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 14 no. 433 (E-979) ,17 September 1990 & JP,A,02 168794 (HITACHI COMMUNICATION SYSTEMS) 28 June 1990, see abstract ---	1,3,4,6
A	PATENT ABSTRACTS OF JAPAN vol. 14 no. 102 (E-894) ,23 February 1990 & JP,A,01 303896 (TOSHIBA CORP) 7 December 1989, see abstract -----	6

# **INTERNATIONAL SEARCH REPORT** Information on patent family members

Intr. Int'l Application No  
**PCT/FR 95/00827**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A-3637684	07-05-87	JP-C- 1811616	27-12-93
		JP-B- 5014294	24-02-93
		JP-A- 62107360	18-05-87
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FR-A-2696888	15-04-94	AU-B- 5114593	09-05-94
		WO-A- 9409570	28-04-94
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EP-A-0355742	28-02-90	JP-A- 2057093	26-02-90
		DE-D- 68919938	26-01-95
		DE-T- 68919938	20-07-95
		US-A- 5235328	10-08-93
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# RAPPORT DE RECHERCHE INTERNATIONALE

Demande internationale No  
PCT/FR 95/00827

A. CLASSEMENT DE L'OBJET DE LA DEMANDE  
CIB 6 G06F3/023 H03J1/00

Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB

B. DOMAINES SUR LESQUELS LA RECHERCHE A PORTE

Documentation minimale consultée (système de classification suivi des symboles de classement)  
CIB 6 G06F H03J

Documentation consultée autre que la documentation minimale dans la mesure où ces documents relèvent des domaines sur lesquels a porté la recherche

Base de données électronique consultée au cours de la recherche internationale (nom de la base de données, et si cela est réalisable, termes de recherche utilisés)

C. DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie *	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
Y	DE,A,36 37 684 (SHARP) 7 Mai 1987 cité dans la demande voir le document en entier ---	1-5,7
Y	FR,A,2 696 888 (MORGAIN SYLVAIN ; PARIENTI RAOUL) 15 Avril 1994 voir page 2, ligne 1 - page 3, ligne 4 voir page 5, ligne 26 - ligne 30 ---	1-5,7
A	EP,A,0 355 742 (SONY CORPORATION) 28 Février 1990 cité dans la demande voir colonne 4, ligne 20 - colonne 6, ligne 7 voir colonne 7, ligne 24 - colonne 11, ligne 14 --- -/--	1,2,4,5, 7

☒ Voir la suite du cadre C pour la fin de la liste des documents

☒ Les documents de familles de brevets sont indiqués en annexe

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Date à laquelle la recherche internationale a été effectivement achevée

4 Octobre 1995

Date d'expédition du présent rapport de recherche internationale

11.10.95

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